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China's Airspace Management Challenge

by

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Military Trumps Civilian in China's Restrictive Airspace Management Scheme

As the number of civil aviation users increases and the aviation industry continues to mature in China, Beijing seeks to strike a balance between liberalizing its airspace to respond to growing commercial demands and retaining a strict military hold on airspace for the purpose of national security.[1] Eighty percent of China's national airspace is devoted to military use, leaving 20 percent to civil aviation. By contrast, the United States allocates roughly 20 percent of its airspace to the military, generally over remote or ocean regions that do not impact civil aviation.[2]

Both civilian and military authorities govern Chinese airspace under the State Air Traffic Control Commission (SATCC). However, the People's Liberation Army (PLA) Air Force and the PLA General Staff Department take the operational lead on air traffic control (ATC). Moreover, the SATCC is closely affiliated with the PLA General Staff Department, and the SATCC's director-general in charge of day-to-day management of China's skies is a PLA major general.[3] This military-dominant ATC scheme often puts the PLA at odds with China's civil aviation authority, the Civil Aviation Administration of China (CAAC). When seeking takeoff and landing permissions for civil aviation, CAAC officials can be subject to the PLA's sudden and extensive airspace restrictions. [4]

Although aviation officials typically cite unfavorable weather conditions as a chief reason for schedule delays, PLA drills and activities also routinely close off civilian airspace on short notice. A CAAC notice in July 2014 stated "thunderstorms and routine military exercises" necessitated reduced civilian air traffic across eastern China. Beijing ordered 12 airports, including two of the country's busiest airports in Shanghai, to reduce traffic by 25 percent from July 20 to August 15.[5] CAAC may have deemed it necessary to justify the hundreds of flight cancellations and delays to passengers; with unusual candor, CAAC disclosed the military's role in the airspace restrictions.[6]

China Seeking ATC Reform, Expansion of Aviation Industry

Chinese leaders recognize the immense degree of control that the PLA exercises over China's airspace hinders the growth they are seeking in the Chinese civilian aviation sector.[7] At one extreme, unregulated airspace would allow unimpeded flow of air traffic but is unsafe and poses challenges for national security. At the other extreme, complete PLA control over airspace hinders the smooth flow of air traffic of all types and forestalls the potential for economic development.

In seeking to respond more flexibly to changing needs and shifts in air traffic, China is exploring ATC reforms by drawing inspiration from best practices in foreign ATC systems.[8] According to Marc Szepan, a former aviation industry executive currently based at the University of Oxford, a key difference between China's system and those China seeks to emulate is the flexibility in the use of airspace. In the United States and Europe, for example, both civil and military users share airspace, and civil aircraft routinely request and are granted permission to fly through so-called joint use airspace when it is not being utilized for military training. Such shortcuts result in not only time and cost savings, but also de-congestion of standard civil airways. Chinese regulatory authorities have made significant progress in this important area. However, protocols that govern the flexible use of airspace in China are not yet equivalent with those in the United States or Europe. [9*]

[*] The PLA Air Force sometimes opens temporary air corridors in anticipation of periods of heavy travel in China, such as the Chinese Lunar New Year. CCTV-7 "Air Force Opens 117 Temporary Routes to Make Way for Spring Festival Traffic," January 18, 2012. OSC ID: CPP20120405133043; Nirav Patel, "Chinese Disaster Relief Operations: Identifying Critical Capability Gaps," *Joint Forces Quarterly* 52 (1st Quarter 2009), 114.

An additional driver motivating reform is the central government's acknowledgement of growth potential for China's general aviation (GA) sector, which remains relatively small compared to that of the United States. GA includes all civilian air traffic except scheduled passenger and cargo flights, and includes agricultural aviation, corporate aviation, helicopters, and recreational flying, among many other types of flights.[10] The majority of these flights operate in low-altitude airspace. CAAC's 12th Five-Year Plan, which outlines Beijing's goals for civil aviation from 2011 to 2015, includes a goal to double the number of GA aircraft in China. It states: "General aviation … plays the role that cannot be replaced in national economic and social construction. We shall accelerate infrastructure construction, enlarge the service scope and scale and promote fast development of GA. *The key lies in improving the environment for the development of GA* [emphasis in original]."[11]

China faces a few key challenges as it seeks to strike a balance between economic development and national security needs in China's skies. One challenge is the sometimes strained relationship between local governments, which prioritize urban growth, and the PLA, which occupies valuable land for airbases near urban centers.[12] One official press report, for instance, stated development in areas close to PLA airports has led to the closing or relocation of at least ten of these airports. According to the press report, nearby buildings built too high for the safe take-off and landing of aircraft, as well as urban dwellers raising birds and launching model airplanes that pose a risk to military air operations, "impede not only PLA morale, but military exercises as well."[13]

Another challenge is the "incubation period" required for China to develop the infrastructure and aircraft fleets in line with China's civil aviation ambitions.[14] The scale of the anticipated expansion is immense. Compared to the United States' 13,513 airports, China had only 507 in 2013, putting it just behind Germany for total number of airports in country.[15] Even established airports are in need of infrastructure expansion, such as a greater number of runways or radars, in order to handle increasing traffic.[16] Moreover, identifying, recruiting, and training a nationwide corps of air traffic controllers, necessary for the safe operation of an expanding aviation industry, is an additional hurdle for China. Training alone for an air traffic controller can take up to three years; staffing a growing number of airports nationwide with experienced air traffic controllers further extends the incubation period.[17]

2008 Earthquake Relief Effort Catalyzes Reform

The devastating 2008 earthquake in Sichuan Province underscored some of the inefficiencies in China's airspace management system and catalyzed Beijing's efforts to reform China's airspace. Because harsh terrain and road damage hampered ground-based relief efforts, airlift proved to be the most useful method for delivering aid. However, according to some estimates, thousands died in the initial days after the earthquake due to a delay in aid delivery. Much of this delay can be attributed to shortfalls in the PLA's logistics and strategic airlift, but inefficiencies in ATC also played a role.[18]

As Beijing rushed resources to the area, the Chengdu Military Region Air Force[†] led regional ATC, coordinating the efforts of a variety of military and civilian units.[19] Official Chinese press reported that "to have this many aircraft assembled at one time in the Chengdu regional airspace was unprecedented in history."[20] Yet, the PLA likely was unprepared for the surge in air traffic following the earthquake. Outside assistance by air—from sources as diverse as the United States, Russia, Pakistan, and even the FedEx Corporation—likely suffered from and contributed to air congestion. Despite opening multiple temporary air corridors and re-organizing airspace to prioritize relief efforts, the PLA Air Force's

[†] China is geographically organized into seven Military Regions: Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou, and Chengdu. The Military Region Air Force headquarters is the highest air force organizational echelon within each Military Region.

response to the earthquake affected commercial flight schedules, delaying both passengers with planned air travel and to relief workers arriving to the area by commercial air. [21]

The earthquake also disabled the area's chief ATC tower and radar, disrupting air traffic in western China and temporarily limiting relief efforts to ground-based transportation.[22] The lack of back-up equipment or plan to address a disabled ATC tower also suggests the PLA's unpreparedness in 2008 to manage air traffic in a contingency situation.

Furthermore, the inability to adjust ATC to meet both military and civil demand in emergency peacetime circumstances suggests the PLA Air Force may face difficulties adjusting air defense responsibilities to meet wartime objectives. Although China's command and control of military forces transitions to a task force structure during major crises with geographic boundaries reflecting PLA objectives, official Chinese press indicated the PLA organized the Joint Earthquake Relief Headquarters under the auspices of the Chengdu Military Region, which covers southwestern China to China's tensely disputed border with India.[23] Dividing PLA Air Force responsibilities along political boundaries (such as provincial borders) rather than using militarily relevant geography could negatively impact readiness elsewhere in the same Military Region.

After the earthquake, popular criticism of perceived inadequacies of the central government's disaster relief efforts was a strong factor in energizing Beijing to deregulate airspace. Less than a year after the tragedy, CAAC in 2009 announced that, on an experimental basis, it would ease restrictions on flight in low altitudes—where the vast majority of GA operates—in a few areas across China.[24]

Improved Air Intelligence, Surveillance, and Reconnaissance Could Pave the Way for Better Airspace Management

As the PLA strengthens its air intelligence, surveillance, and reconnaissance (ISR) capabilities, it may be more willing to relinquish control over national airspace to civilian authority. Official Chinese press reported the completion of an "air intelligence radar network" with nationwide coverage in 2007,[25] and by 2014, the U.S. Air Force assessed the PLA maintains airspace awareness through "generally excellent and dense ground-based radar coverage."[26] Ongoing ISR upgrades and acquisitions, combined with accumulated experience and training, will continue to improve China's ability to anticipate, identify, and respond to air threats.

China's growing confidence in its air defense is reflected in the recent establishment of the Air Defense Identification Zone (ADIZ) off the country's eastern seaboard. In November 2013, China's Ministry of Defense declared an ADIZ over a portion of the East China Sea, citing the need to "[protect] state sovereignty and territorial and airspace security."[27] From an operational perspective, the establishment of the ADIZ was a culmination of years of PLA investment in improved joint ISR.[28] China's richer air surveillance picture could enable the PLA Air Force to more efficiently devote resources to the flexible use of airspace.

Stalled Update to Aviation Legislation Suggests PLA Will Retain Control in Near Term

Developments in Chinese regulation and legislation suggest there is potential for greater airspace liberalization in China. Efforts in the 1980s to create a comprehensive system of regulation for both military and civil aircraft were unsuccessful. Instead, the 1995 Civil Aviation Law established separate standards and regulatory regimes for military and civil aircraft.[29] Since the promulgation of the Civil Aviation Law, however, subsequent regulations have aimed to accommodate the growing volume of civil flights in China. In 2007, for example, CAAC essentially doubled the number of airspace layers in which

aircraft can travel in China, comparable to opening more lanes on a highway. Additionally, the State Council and Central Military Commission released the "Guideline on Deepening the Reforms on Low-Altitude Airspace Management" in 2010.[30] This high-level guidance spurred continuing reforms in low-altitude airspace regulation beyond the 2009 experimentation with relaxing restrictions in this area (mentioned in the previous section, "Lessons Learned from 2008 Earthquake Relief").

A comprehensive law that could streamline regulation for both military and civil aviation has been in development for several years. The drafting committee for the law includes National People's Congress (NPC) delegates from across various sectors, including PLA officials, civil aviation officials, and industry leaders. Although some NPC delegates sought to reconsider the 1995 Civil Aviation Law at the 2008 and 2013 sessions of the NPC, the law remains unchanged. [31] The inability to update the law could be due to the lack of widespread PLA support for airspace deregulation.

One aviation industry specialist in China assesses success with moderate reform in low-altitude airspace could lead to more meaningful changes to Chinese aviation regulations in China's 13th Five-Year Plan from 2016 to 2020. PLA control of higher altitudes, however, is unlikely to change significantly.[32] Although such reforms are unlikely to ameliorate air congestion, particularly at higher altitudes, they could pave the way for greater diversification of types of aircraft—particularly GA—operating in China's skies.

[1] Iacob Koch-Weser, *China's Hunger for U.S. Planes and Cars: Assessing the Risks* (U.S.-China Economic and Security Review Commission, March 27, 2014). *http://origin.www.uscc.gov/sites/default/files/Research/USCC%20Economic%20Issue%20Brief_ChinasHunger_03.27.14.pdf*; James Fallows, *China Airborne* (New York, NY: Pantheon Books, 2012), pp. 187-192.

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